

Weather Services

Chapter 7

Questions

1. What airport did you choose?
2. How did your WX forecast change through the week?
3. What resources did you use on Tuesday, Thursday, Saturday, and Monday?
4. How accurate is your forecast?

Overview

- ▶ Observations
- ▶ Forecasts
- ▶ Warnings

METAR

KBLI 161853Z 18010G22KT 10SM CLR 16/07 A3009 RMK A02
SLP196 T01610072

- ▶ Station: KBLI
- ▶ Time: 161853 is 16th day of the month at 1853Z.
- ▶ Winds: 18010G22KT is 180° magnetic at 10 knots gusting to 22 knots.
- ▶ Visibility: 10SM 10 status miles.
- ▶ Clouds: CLR Clear below 12,000 feet.
- ▶ Temperature and Dewpoint: 16/07 is temperature 16°C and dewpoint 7°C.
- ▶ Remarks: RMK A02 SLP196 T01610072 is automated with perception measurements, sea level pressure of 1196mb, temperature 16.1°C, and dewpoint 7.2°C.

METAR

Let's try some more:

```
KRNO 161955Z 24012G21KT 10SM FEW090 FEW230 29/M03  
A3006 RMK A02 SLP124 T02891028
```

```
KSEA 161953Z VRB04KT 10SM FEW030 SCT190 BKN250 19/09  
A3012 RMK A02 SLP204 T01940089
```

```
NZCM 161155Z AUTO 11009KT 9999 OVC070 M16/M25 A2900  
RMK A02 SLP825 T11571245 11140 21178 410651178 53011
```

<https://aviationweather.gov/>

Pilot Report (PIREP)

65S UA /OV 65S/TM 1954/FL095/TP C182/WX -SHRA/TA
16/TB LGT/RM OVC105 GOOD VIS

- ▶ FAA Station ID: 65S which is Bonners Ferry, ID
- ▶ Kind of report: UA routine report vs UUA urgent report.
- ▶ Location: OV 65S location information
- ▶ Time: TM 1954 1954Z
- ▶ Altitude: FL095 9,500 feet (Not really a flight-level)
- ▶ Aircraft: TP C182 Cessna 182
- ▶ Sky Coverage: SK not present in this example
- ▶ Flight visibility and weather: WX -SHRA light rain showers
- ▶ Temperature: TA 16 16°C at altitude
- ▶ Wind: WA no present in this example
- ▶ Turbulence: TB LGT light turbulence
- ▶ Icing: IC not present in this example
- ▶ Remarks: RM OVC105 GOOD VIS Overcast tops at 10,500MSL with good visibility.

PIREP

PDX UA /OV BTG197045/TM 1949/FL390/TP B737/TB OCNL
LGT/RM ZSE

EUG UA /OV EUG142065/TM 1949/FL380/TP B737/TB OCNL
LGT CHOP/RM ZSE

GJT UA /OV JNC/TM 2012/FL340/TP A320/TB ONCL LGT
CHOP/RM ZDVWC-04

<https://aviationweather.gov/gfa/#obs>

Charts

- ▶ Flight Category
- ▶ METARs
- ▶ Fronts
- ▶ AIRMETs
- ▶ SIGMETs

<https://aviationweather.gov/gfa/#obs>

Terminal Aerodrome Forecast

Every 6 hours and covers 24 or 36-hour period.

```
KSEA 161741Z 1618/1724 24006KT P6SM BKN250  
FM162300 28007KT P6SM SCT250  
FM170600 17005KT P6SM FEW250  
FM171400 22005KT P6SM FEW010 SCT250  
FM171800 22007KT P6SM FEW250
```

- ▶ Station: KSEA
- ▶ Time: 161741Z Issued on the 16th at 1741Z
- ▶ Period: 1618/1724 From 16th at 1800 to 17th at 2400.
- ▶ Winds, visibility, and weather.

TAF

Every 6 hours and covers 24 or 36-hour period.

```
PANC 161743Z 1618/1724 24005KT P6SM SCT012 BKN035  
  TEMPO 1618/1621 BKN012  
  FM162100 26008KT P6SM SCT035 BKN080  
  TEMPO 1621/1624 BKN035  
  FM171200 15012G20KT P6SM BKN080  
  FM172000 16010KT P6SM VCSH SCT040 OVC060
```

TAF

Every 6 hours and covers 24 or 36-hour period.

```
KSTL 161738Z 1618/1724 14005KT P6SM BKN050 OVC120  
  PROB30 1618/1621 5SM -SHRA BKN035  
  FM170900 VRB03KT 6SM BR BKN009  
  FM171400 23005KT P6SM SCT015
```

TAF

Every 6 hours and covers 24 or 36-hour period.

```
TAF KNUW 1615/1715 23009KT 9999 BKN050 BKN180 BKN250  
QNH3006INS
```

```
BECMG 1702/1704 28010G18KT 9999 FEW050 SCT200 QNH3007INS
```

```
BECMG 1709/1711 18008KT 8000 BR FEW012 SCT050 QNH3004INS
```

```
TX15/1622Z TN10/1613Z FS30028
```

Prog. Charts

- ▶ Low Level Significant Weather Prognostication Chart.
- ▶ Terminal and Extended Convective Forecasts
- ▶ Turbulence
- ▶ Icing
- ▶ Gusts and Winds

<https://aviationweather.gov/graphics/>

SIGMETs and AIRMETs

- ▶ AIRMETs warn about meteorological conditions of interest to smaller aircraft (e.g., us).
 - ▶ Issued for 6 hours.
 - ▶ For example, turbulence, icing, visibility, and mountain obscuration.
- ▶ SIGMETs warn about significant meteorological conditions of interest to all aircraft (e.g., airliners).
 - ▶ Issued for 4 hours.
 - ▶ For example, severe turbulence, thunderstorms, and volcanic ash.

<https://aviationweather.gov/graphics/>

<https://aviationweather.gov/gfa/#obs>

- 1) Ceiling is defined as the height above the Earth's surface of the
- A Lowest reported obscuration and the highest layer of clouds reported as overcast.
 - B lowest layer of clouds or obscuring phenomenon reported as broken or overcast.
 - C lowest layer of clouds reported as scattered or broken.

2) From which primary source should information be obtained regarding expected weather at your destination and estimated time of arrival?

- A Low Level Prog Chart.
- B Weather Depiction Chart.
- C Terminal Aerodrome Forecast.

3) The base and tops of the overcast layer reported by a pilot in this PIREP are

UA / OV ICT / TM 1230 / FL140 / TP M20K /
SK020 BKN 045 / 076 OVC 092 / TA-10 /WV210035 /
TB LGT / IC LGT

- A 2,000 feet MSL and 4,500 feet MSL.
- B 7,600 feet AGL and 9,200 feet AGL.
- C 7,600 feet MSL and 9,200 feet MSL.

```
METAR KINK 121845Z 11012G18KT 15SM SKC 25/17 A3000
METAR KBOI 121845Z 13004KT 30SM SCT150 17/6 A3015
METAR KLAX 121852Z 25004KT 6SM BR SCT007 SCT250 16/15
A2991
SPECI KMDW 121856Z 32005KT 1 1/2SM RA OVC007 17/16 A2980
RMK RAB35
SPECI KJFK 121853Z 18004KT 1/2SM FG R04/2200 OVC 005 20/18
A3006
```

4) Which of the reporting stations have VFR weather?

- A All.
- B KINK, KBOI, and KJFK.
- C KINK, KBOI, and KLAX.

```
METAR KINK 121845Z 11012G18KT 15SM SKC 25/17 A3000
METAR KBOI 121845Z 13004KT 30SM SCT150 17/6 A3015
METAR KLAX 121852Z 25004KT 6SM BR SCT007 SCT250 16/15
A2991
SPECI KMDW 121856Z 32005KT 1 1/2SM RA OVC007 17/16 A2980
RMK RAB35
SPECI KJFK 121853Z 18004KT 1/2SM FG R04/2200 OVC 005 20/18
A3006
```

5) The wind direction and velocity at KJFK is from

- A 180° true at 4 knots.
- B 180° magnetic at 4 knots.
- C 40° true at 18 knots.

```
METAR KINK 121845Z 11012G18KT 15SM SKC 25/17 A3000
METAR KBOI 121845Z 13004KT 30SM SCT150 17/6 A3015
METAR KLAX 121852Z 25004KT 6SM BR SCT007 SCT250 16/15
A2991
SPECI KMDW 121856Z 32005KT 1 1/2SM RA OVC007 17/16 A2980
RMK RAB35
SPECI KJFK 121853Z 18004KT 1/2SM FG R04/2200 OVC 005 20/18
A3006
```

6) What are the wind conditions at Wink, Texas (KINK)?

- A Calm.
- B 110° at 12 knots, gusts 18 knots.
- C 111° at 2 knots, gusts 18 knots.

```
METAR KINK 121845Z 11012G18KT 15SM SKC 25/17 A3000
METAR KBOI 121845Z 13004KT 30SM SCT150 17/6 A3015
METAR KLAX 121852Z 25004KT 6SM BR SCT007 SCT250 16/15
A2991
SPECI KMDW 121856Z 32005KT 1 1/2SM RA OVC007 17/16 A2980
RMK RAB35
SPECI KJFK 121853Z 18004KT 1/2SM FG R04/2200 OVC 005 20/18
A3006
```

7) The remarks section for KMDW has RAB35 listed. This entry means

- A blowing mist has reduced the visibility to $1\frac{1}{2}$ SM.
- B rain began at 1835Z.
- C the barometer has risen .35" Hg.

```
METAR KINK 121845Z 11012G18KT 15SM SKC 25/17 A3000
METAR KBOI 121845Z 13004KT 30SM SCT150 17/6 A3015
METAR KLAX 121852Z 25004KT 6SM BR SCT007 SCT250 16/15
A2991
SPECI KMDW 121856Z 32005KT 1 1/2SM RA OVC007 17/16 A2980
RMK RAB35
SPECI KJFK 121853Z 18004KT 1/2SM FG R04/2200 OVC 005 20/18
A3006
```

8) What are the current conditions depicted for Chicago Midway Airport (KMDW)?

- A Sky 700 feet overcast, visibility $1\frac{1}{2}$ SM, rain.
- B Sky 7,000 feet overcast, visibility $1\frac{1}{2}$ SM, rain.
- C Sky 700 feet overcast, visibility 11, occasionally 2 SM, with rain.

TAF KMEM 121720Z 121818 20012KT 5SM HZ BKN030 PROB40 2022
1SM TSRA OVC008CB
FM2200 33015G20KT P6SM BKN015 OVC025 PROB40 2202 3SM
SHRA
FM0200 35012KT OVC008 PROB40 0205 2SM -RASN BECMG 0608
0200*KT NSW BKN012 BECMG 1012 00000KT 3SM BR SKC TEMPO
1214 1 1/2SM FG
FM1600 VRB04KT P6SM NSW SKC=
KOKC 051130Z 051212 14008KT 5SM BR BKN030 TEMPO 1316
1 1/2SM BR
FM1600 16012KT P6SM NSW SKC BECMG 2224 20013G20KT 4SM
SHRA OVC020 PROB40 0006 2SM TSRA OVC008CB BECMG 0608
21015KT P6SM NSW SCT040=

9) What is the valid time for the TAF KMEM?

- A 1200Z to 1200Z.
- B 1200Z to 1800Z.
- C 1800Z to 1800Z.

TAF KMEM 121720Z 121818 20012KT 5SM HZ BKN030 PROB40 2022
1SM TSRA OVC008CB
FM2200 33015G20KT P6SM BKN015 OVC025 PROB40 2202 3SM
SHRA
FM0200 35012KT OVC008 PROB40 0205 2SM -RASN BECMG 0608
0200*KT NSW BKN012 BECMG 1012 00000KT 3SM BR SKC TEMPO
1214 1 1/2SM FG
FM1600 VRB04KT P6SM NSW SKC=
KOKC 051130Z 051212 14008KT 5SM BR BKN030 TEMPO 1316
1 1/2SM BR
FM1600 16012KT P6SM NSW SKC BECMG 2224 20013G20KT 4SM
SHRA OVC020 PROB40 0006 2SM TSRA OVC008CB BECMG 0608
21015KT P6SM NSW SCT040=

10) In the TAF for KMEM, what does “SHRA” stand for?

- A Rain showers.
- B shift in wind direction is expected.
- C A significant change in precipitation is possible.

TAF KMEM 121720Z 121818 20012KT 5SM HZ BKN030 PROB40 2022
1SM TSRA OVC008CB
FM2200 33015G20KT P6SM BKN015 OVC025 PROB40 2202 3SM
SHRA
FM0200 35012KT OVC008 PROB40 0205 2SM -RASN BECMG 0608
0200*KT NSW BKN012 BECMG 1012 00000KT 3SM BR SKC TEMPO
1214 1 1/2SM FG
FM1600 VRB04KT P6SM NSW SKC=
KOKC 051130Z 051212 14008KT 5SM BR BKN030 TEMPO 1316
1 1/2SM BR
FM1600 16012KT P6SM NSW SKC BECMG 2224 20013G20KT 4SM
SHRA OVC020 PROB40 0006 2SM TSRA OVC008CB BECMG 0608
21015KT P6SM NSW SCT040=

11) Between 1000Z and 1200Z, the visibility at KMEM is forecast to be

- A $\frac{1}{2}$ Statute miles.
- B 3 statute miles.
- C 6 statute miles.

TAF KMEM 121720Z 121818 20012KT 5SM HZ BKN030 PROB40 2022
1SM TSRA OVC008CB
FM2200 33015G20KT P6SM BKN015 OVC025 PROB40 2202 3SM
SHRA
FM0200 35012KT OVC008 PROB40 0205 2SM -RASN BECMG 0608
0200*KT NSW BKN012 BECMG 1012 00000KT 3SM BR SKC TEMPO
1214 1 1/2SM FG
FM1600 VRB04KT P6SM NSW SKC=
KOKC 051130Z 051212 14008KT 5SM BR BKN030 TEMPO 1316
1 1/2SM BR
FM1600 16012KT P6SM NSW SKC BECMG 2224 20013G20KT 4SM
SHRA OVC020 PROB40 0006 2SM TSRA OVC008CB BECMG 0608
21015KT P6SM NSW SCT040=

12) What is the forecast wind for KMEM from 1600Z until the end of the forecast?

- A No significant wind.
- B 20° at 8 knots.
- C Variable in direction at 4 knots.

```
KOKC 051130Z 051212 14008KT 5SM BR BKN030 TEMPO 1316  
1 1/2SM BR  
FM1600 16012KT P6SM NSW SKC BECMG 2224 20013G20KT 4SM  
SHRA OVC020 PROB40 0006 2SM TSRA OVC008CB BECMG 0608  
21015KT P6SM NSW SCT040=
```

- 13) In the TAF from KOKC, the “FM (FROM) group” is
- A forecast for the hours from 1600Z to 2200Z with the wind from 160° at 10 knots.
 - B forecast for the hours from 1600Z to 2200Z with the wind from 160° at 10 knots, becoming 220° at 13 knots with gusts to 20 knots.
 - C forecast for the hours from 1600Z to 2200Z with the wind from 160° at 10 knots, becoming 210° at 15 knots.

```
KOKC 051130Z 051212 14008KT 5SM BR BKN030 TEMPO 1316  
1 1/2SM BR  
FM1600 16012KT P6SM NSW SKC BECMG 2224 20013G20KT 4SM  
SHRA OVC020 PROB40 0006 2SM TSRA OVC008CB BECMG 0608  
21015KT P6SM NSW SCT040=
```

14) In the TAF from KOKC, the clear sky becomes

- A overcast at 2,000 feet during the forecast period between 2200Z and 2400Z.
- B overcast at 200 feet with a 40% probability of becoming overcast at 600 feet during the forecast period between 2200Z and 2400Z.
- C overcast at 200 feet with the probability of becoming overcast at 400 feet during the forecast period between 2200Z and 2400Z.

```
KOKC 051130Z 051212 14008KT 5SM BR BKN030 TEMPO 1316  
1 1/2SM BR  
FM1600 16012KT P6SM NSW SKC BECMG 2224 20013G20KT 4SM  
SHRA OVC020 PROB40 0006 2SM TSRA OVC008CB BECMG 0608  
21015KT P6SM NSW SCT040=
```

15) During the time period from 0600Z to 0800Z, what significant weather is forecast for KOKC?

- A Wind — 210° at 15 knots.
- B Visibility — possibly 6 statute miles with scattered clouds at 4,000 feet.
- C No significant weather is forecast for this time period.